

Bellwork: 4/25/13

Simplify the following radical expressions:

1) $-4\sqrt{45x^7y^{18}z}$ 2) $5\sqrt[3]{-56x^9y^{12}z^{34}}$

Handwritten notes for problem 1:
45
9 5
3 3

$-12\sqrt{5}$

⑮ $\sqrt{36x^2y^3}$

$\begin{matrix} \swarrow \searrow \\ 6 & 6 \end{matrix}$

$6xy \sqrt{y}$

⑯ $\sqrt{384x^4y^3}$

$\begin{matrix} \swarrow \searrow \\ 16 & 24 \end{matrix}$

$\begin{matrix} \swarrow \searrow & \swarrow \searrow \\ 4 & 4 & 3 \end{matrix}$

$\begin{matrix} \swarrow \searrow \\ 2 & 2 \end{matrix}$

$\begin{matrix} \swarrow \searrow & \swarrow \searrow & \swarrow \searrow \\ 4 & 4 & 2 & 2 & 2 & 3 \end{matrix}$

$8x^2y \sqrt{6y}$

Algebra II
Sect. 6-3

Obj: To add and subtract radical expressions

Sum or Difference of Radicals:

can only add +
subtract if
under
root is
the same!

yes

Done ☺

Combine like
terms
if possible

no

1. Simplify the radicand
2. Combine like terms

$$\begin{matrix} 2\sqrt{3} + 4\sqrt{3} = 6\sqrt{3} \\ 2x + 4x = 6x \end{matrix}$$

$$2\sqrt{3} + 2\sqrt{5}$$

$$2x + 2y$$

$$2 + 3\sqrt{3} \neq 5\sqrt{3}$$

$$2 + 3x \neq 5x$$

1.) $(1 + \sqrt{3}) + (2 - 4\sqrt{3})$

$$1 + 2 \quad 1\sqrt{3} - 4\sqrt{3}$$

$$\boxed{3 - 3\sqrt{3}}$$

2.) $(3 - 7\sqrt{5}) - (2 + 3\sqrt{5})$

$$3 - 2 \quad -7\sqrt{5} - 3\sqrt{5}$$

$$\boxed{1 - 10\sqrt{5}}$$

Simplify all roots first!

3.) $(6 + \sqrt{12}) + (-7 + \sqrt{75})$

$$\begin{array}{c} \begin{array}{cc} 3 & 4 \\ \swarrow & \searrow \\ 2 & 3 \end{array} \quad \begin{array}{cc} 25 & 3 \\ \swarrow & \searrow \\ 5 & 3 \end{array} \\ \downarrow \quad \downarrow \\ (6 + 2\sqrt{3}) + (-7 + 5\sqrt{3}) \\ 6 + -7 \quad 2\sqrt{3} + 5\sqrt{3} \end{array}$$

$$\boxed{-1 + 7\sqrt{3}}$$

5.) $(3 - \sqrt{24}) + (8 - \sqrt{96})$

$$\begin{array}{c} \begin{array}{cc} 8 & 3 \\ \swarrow & \searrow \\ 4 & 2 \end{array} \quad \begin{array}{cc} 16 & 6 \\ \swarrow & \searrow \\ 4 & 3 \end{array} \\ \downarrow \quad \downarrow \\ (3 - 2\sqrt{6}) + (8 - 4\sqrt{6}) \\ 3 + 8 \quad -2\sqrt{6} + -4\sqrt{6} \end{array}$$

$$\boxed{11 - 6\sqrt{6}}$$

4.) $(-5 - \sqrt{18}) - (6 + \sqrt{50})$

$$\begin{array}{c} \begin{array}{cc} 6 & 3 \\ \swarrow & \searrow \\ 2 & 3 \end{array} \quad \begin{array}{cc} 5 & 10 \\ \swarrow & \searrow \\ 5 & 2 \end{array} \\ \downarrow \quad \downarrow \\ (-5 - 3\sqrt{2}) - (6 + 5\sqrt{2}) \\ -5 - 6 \quad -3\sqrt{2} - 5\sqrt{2} \end{array}$$

$$\boxed{-11 - 8\sqrt{2}}$$

6.) $(4 + \sqrt{27}) - (-15 + \sqrt{48})$

$$\begin{array}{c} (4 + 3\sqrt{3}) - (-15 + 4\sqrt{3}) \\ 4 + +15 \quad 3\sqrt{3} - 4\sqrt{3} \end{array}$$

$$\boxed{19 - \sqrt{3}}$$

HW - pgs 11 & 12
evens - all

$$\begin{array}{c} \textcircled{28} - \sqrt{27} - 3\sqrt{45} - \sqrt{20} + 2\sqrt{45} \\ \begin{array}{cc} 9 & 3 \\ \swarrow & \searrow \\ 3 & 3 \end{array} \quad \begin{array}{cc} 5 & 9 \\ \swarrow & \searrow \\ 3 & 3 \end{array} \quad \begin{array}{cc} 4 & 5 \\ \swarrow & \searrow \\ 2 & 5 \end{array} \quad \begin{array}{cc} 5 & 9 \\ \swarrow & \searrow \\ 3 & 3 \end{array} \\ -3\sqrt{3} - 9\sqrt{5} - 2\sqrt{5} + 6\sqrt{5} \end{array}$$

$$\boxed{-3\sqrt{3} - 5\sqrt{5}}$$

